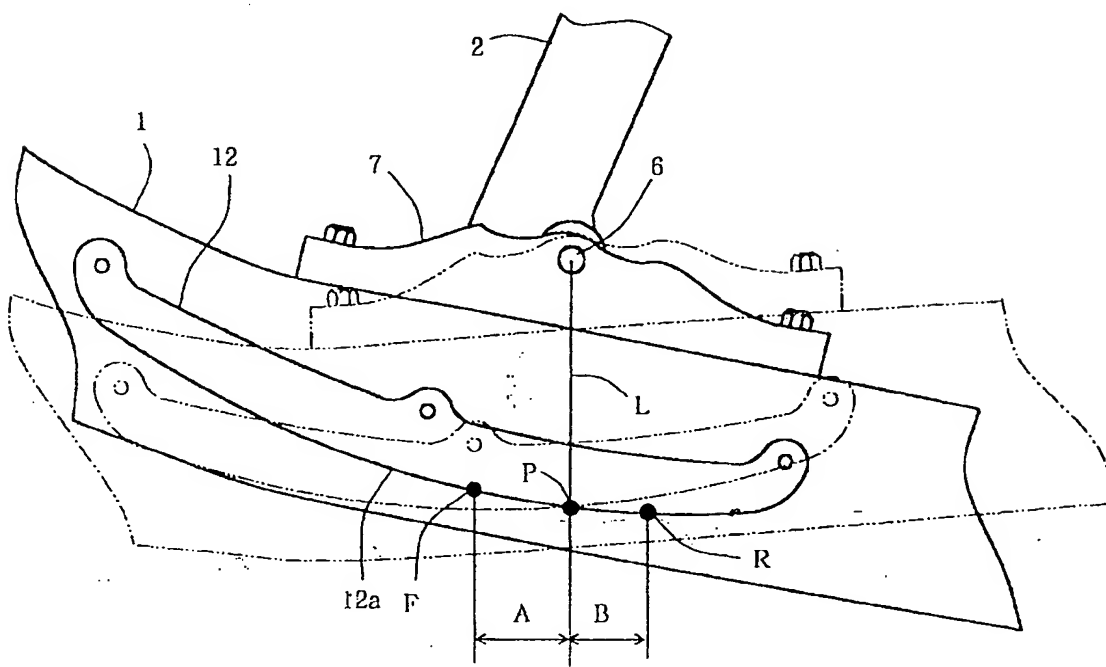




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(51) Int.Cl.⁶ B62B 17/02, B62D 55/07
(30) 1996/02/16 (Hei-8-053759) JP
(54) **MOTONEIGE**
(54) **SNOW MOBILE**



(57) Carres latérales (12) fixées aux surfaces latérales droite et gauche d'un ski de direction (1). Cette carre latérale (12) présente une surface inférieure arquée de façon continue. Un plan vertical où se trouve l'axe d'un pivot (6) traverse une section centrale de chaque carre latérale (12). Le déplacement des centres de contact (F, R) par rapport à un point de pivotement et les distances (A, B) entre le point de pivotement et les centres de contact (F, R) demeurent réduites lorsque ce ski de direction (1) oscille sur le pivot (6).

(57) Side edges (12) are attached to the right and the left side surfaces of a steering ski (1). The side edge (12) has a continuously curved lower surface. A vertical plane including the axis of a pivot shaft (6) crosses a middle portion of each side edge (12). Dislocation of contact centers (F, R) from a pivot point, and the distances (A, B) between the pivot point and the contact centers (F, R) are small when the steering ski (1) swings on the pivot shaft (6).



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[NAME OF DOCUMENT] ABSTRACT

[ABSTRACT]

[OBJECT] To reduce the variation of steering force.

[CONSTITUTION] Side edges (12) are attached to the right and the left side surfaces of a steering ski (1). The side edge (12) has a continuously curved lower surface.. A vertical plane including the axis of a pivot shaft (6) crosses a middle portion of each side edge (12).

Dislocation of contact centers (F, R) from a pivot point, and the distances (A, B) between the pivot point and the contact centers (F, R) are small when the steering ski (1) swings on the pivot shaft (6).

[SELECTED DRAWING] Fig. 5

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[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[Technical Field of the Invention]

The present invention relates to a snow mobile including a body, a steering ski suspended from a front portion of the body, and an engine-driven caterpillar unit

suspended from a rear portion of the body.

[0002]

[Description of the Related Art]

There have been proposed snow mobiles to which the present invention pertains in, for example, U.S. Patent No. 3,252,533, Japanese Patent Laid-open No. Hei 3-189289 and Japanese Utility Model Publication No. Sho 54-1721.

[0003]

Some of steering skis included in those known snow mobiles are provided with side edges and, generally, the lower surfaces of these side edges are straight.

[0004]

Referring to Fig. 6 showing a prior art steering ski 1, each of side edges 12 attached to the side surfaces of the steering ski 1 has a straight lower surface. In Fig. 6, reference numeral 2 designates a front suspension and reference numeral 6 is a pivot shaft.

[0005]

[Problem to be Solved by the Invention]

As is obvious from Fig. 6, when the steering ski 1 provided with the side edges 12 each having the straight lower surface 12a, the position of the center of a contact portion of the lower surface 12a of the side edge 12 in contact with snow changes greatly between a front contact

center F and a rear contact center R.

[0006]

Consequently, a horizontal distance A between a pivotal point P and the front contact center F and a horizontal distance B between the pivotal point P and the rear contact center R change greatly, whereby steering force is caused to vary in a wide range. It has been desired to maintain steering force constant.

[0007]

[Means for Solving the Problem]

According to an invention stated in claim 1, a snow mobile comprises a body, a steering ski suspended from a front portion of the body, and a caterpillar unit suspended from a rear portion of the body. The steering ski is provided on its side surfaces with side edges having a single or continuous curved surface.

[0008]

According to an invention stated in claim 2, a pivot shaft supporting the steering ski is disposed above a middle portion of the side edges as viewed from the side.

[0009]

According to an invention stated in claim 3, each of the side edges is symmetrical with respect to its center

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axis as viewed from the side.

[0010]

[Description of the Preferred Embodiments]

Referring to Fig. 4 showing a snow mobile in a preferred embodiment according to the present invention, a steering ski 1 is suspended by a front suspension 2 on a front portion of a body, and a caterpillar unit 3 is suspended on a rear portion of the body. The caterpillar unit 3 is driven by an engine, not shown.

[0011]

A floor 4 is extended over the caterpillar unit 3. A driver stands on the floor 4 and operates a steering bar 5.

[0012]

The steering bar 5 can be moved back and forth, and can be turned right and left to turn the front suspension 2 about an axis so that the steering ski 1 is turned for steering.

[0013]

Fig. 2 is a side view of the steering ski 1, Fig. 3 is a plan view of the steering ski 1, and Fig. 1 is an enlarged sectional view taken on line 1-1 in Fig. 2.

[0014]

Referring to Figs. 1 to 3, the steering ski 1 is a

hollow structure having a closed cross section and made of a polyethylene resin or a polypropylene resin (Fig. 1).

[0015]

The front suspension 2 is of a known telescopic type. The lower end of the front suspension is pivotally joined to a ski bracket 7 by a pivot shaft 6.

[0016]

The ski bracket 7 has a longitudinal elongate shape, vertical side walls, and a U-shaped cross section. The ski bracket 7 is mounted through rubber mounts 8 on a central portion of the upper wall of the steering ski 1 and is held in place with bolts 9.

[0017]

As shown in Fig. 2, a front portion of the steering ski 1 is tapered toward the front to form a front cover portion 10. A grip 11 having the shape of a loop, as viewed laterally, is formed integrally with the middle portion of the front portion of the upper wall of the steering ski 1.

[0018]

Side edges 12 of a metal are attached to the right and the left side of a middle portion of the steering ski 1, and a center edge 13 is attached to the central portion of the lower wall of the steering ski 1 so as to extend

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longitudinally.

[0019]

As shown in Fig. 1, the hollow of the steering ski 1 is filled up with a foam packing, such as a polyurethane foam packing 14 when necessary.

[0020]

A longitudinal rib 15 provided with a longitudinal groove 16 is formed in the central portion of the bottom wall of the steering ski 1 so as to protrude downward from the outer surface of the bottom wall.

[0021]

The rib 15 is connected to a central portion of the upper wall by columnar vertical ribs 17.

[0022]

The vertical ribs 17 are arranged at appropriate longitudinal intervals. Bolts 19 are inserted through bolt holes 18 formed in central portions of the vertical ribs 17, and screwed in threaded holes 20 formed in the center edge 13 fitted in the longitudinal groove 16 to fasten the center edge member 13 to the longitudinal rib 15.

[0023]

The center edge 13 may be incorporated into the steering ski 1 by insert molding.

[0024]

The opposite side portions of the bottom wall of the steering ski 1 extend outward from the longitudinal rib 15 so as to rise outward. Insert nuts 22 are buried in the side walls 21 and the side edges 12 are fastened to the side walls 21 by screwing bolts 23 in the insert nuts 22.

[0025]

Insert nuts 24 are buried in the central portion of the upper wall of the steering ski 1, and bolts 9 are inserted through the rubber mounts 8 and are screwed in the insert nuts 24.

[0026]

As shown in Figs. 2 and 3, the lower end 25 of the front suspension 2 has a longitudinally elongate shape, and is provided with recesses in a front and a rear portion of the lower surface thereof. Pivot rubbers 26 are interposed between the lower end 25 and the ski bracket 7 so as to be received in the recesses formed in the lower surface of the lower end 25.

[0027]

A bearing 27 is fitted in the lower end 25 and the pivot shaft 6 having the shape of a bolt is supported in the bearing 27. A collar 28 is inserted in the bearing 27 and the pivot shaft 6 is fastened to the collar 28 with a nut 29 screwed on a threaded portion of the pivot shaft 6.

[0028]

Each side edge 12 has a monotonously continuous curved lower surface 12a. A vertical plane L including the axis of the pivot shaft 6 crosses a middle portion of each side edge 12.

[0029]

The lower surface 12a of each side edge 12 may be any continuously curved surface and the curvature of the lower surface 12a may vary gradually from the front end toward the rear end of the lower surface 12a.

[0030]

Referring to Fig. 5 showing a view of assistance in explaining functions, a contact center is at a point R behind a pivot point P when the steering skid 1 is tilted so that its front portion is raised as indicated by continuous lines, and the contact center is at a point F in front of the pivot point P when the steering skid 1 is tilted so that its front portion is lowered as indicated by alternate long and two short dashes lines.

[0031]

Since the lower surface 12a is a substantially monotonous, continuous curved surface, the distance A between the pivot point P and the contact center F, and the distance B between the pivot point P and the contact center

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R are relatively short and obviously shorter than those in the conventional side edges for the same swing angle of the steering ski.

[0032]

Therefore, even if the steering ski 1 swings on the pivot shaft 6, changes in the position of the contact center of the continuously curved lower surface 12a of the side edge 12 and the contact length of the same are small and hence steering force does not change greatly.

[0033]

When the pivot point P is at a position corresponding to the middle portion of the side edge 12, the contact centers F and R are located near the pivot point P so that change in steering force can further be reduced.

[0034]

Since the side edges 12 are symmetrical with respect to a vertical line, the right and the left side edge 12 are interchangeable and the longitudinal direction of the side edges 12 may be inverted. Thus, the side edges 12 are compatible, which is advantageous to cost reduction and to facilitating assembling work, and the locally abraded right and the left side edges 12 may be inverted to use unabraded portions of the same so that the life of the

side edges is extended.

[0035]

[Effect of the Invention]

Since the lower surfaces of the side edges are monotonous or continuous curved surfaces, changes in the longitudinal position of the contact center and the contact length of the side edges are small and hence steering force remains constant.

[0036]

Furthermore, when the side edges are designed so that the pivot point is located in a middle portion of the side edges, the position of the contact center varies in a narrow range around the pivot points, so that the variation of steering force can further be reduced.

[0037]

Moreover, when the side edges are formed in a shape symmetrical with respect to a vertical line passing its middle point, the right and the left side edges are interchangeable and the enhancement of the compatibility of the parts is advantageous to cost reduction.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[Fig. 1] An enlarged sectional view taken on line 1-1 in Fig. 2.

[Fig. 2] A side view of a steering ski.

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[Fig. 3] A plan view of a steering ski.

[Fig. 4] A side view of a snow mobile in a preferred embodiment according to the present invention.

[Fig. 5] A diagrammatic view of assistance in explaining functions.

[Fig. 6] A view, similar to Fig. 5, of assistance in explaining functions of a conventional steering ski.

[REFERENCE CHARACTERS]

1 ... steering ski, 2 ... front suspension, 3 ...
caterpillar unit, 12 ... side edge, 12a ... lower surface

[CLAIMS]

[Claim 1]

A snow mobile comprising: a body; a steering ski suspended from a front portion of the body; and an engine-driven caterpillar unit suspended from a rear portion of the body; wherein the steering ski is provided on its side surfaces with side edges having a monotonous or continuous lower curved surface.

[Claim 2]

The snow mobile according to claim 1, wherein a pivot shaft supporting the steering ski is disposed above a middle portion of the side edges as viewed from the side.

[Claim 3]

The snow mobile according to claim 1, wherein each of the side edges is symmetrical with respect to its center axis as viewed from the side.

SMART & BIGGAR

OTTAWA, CANADA

PATENT AGENTS

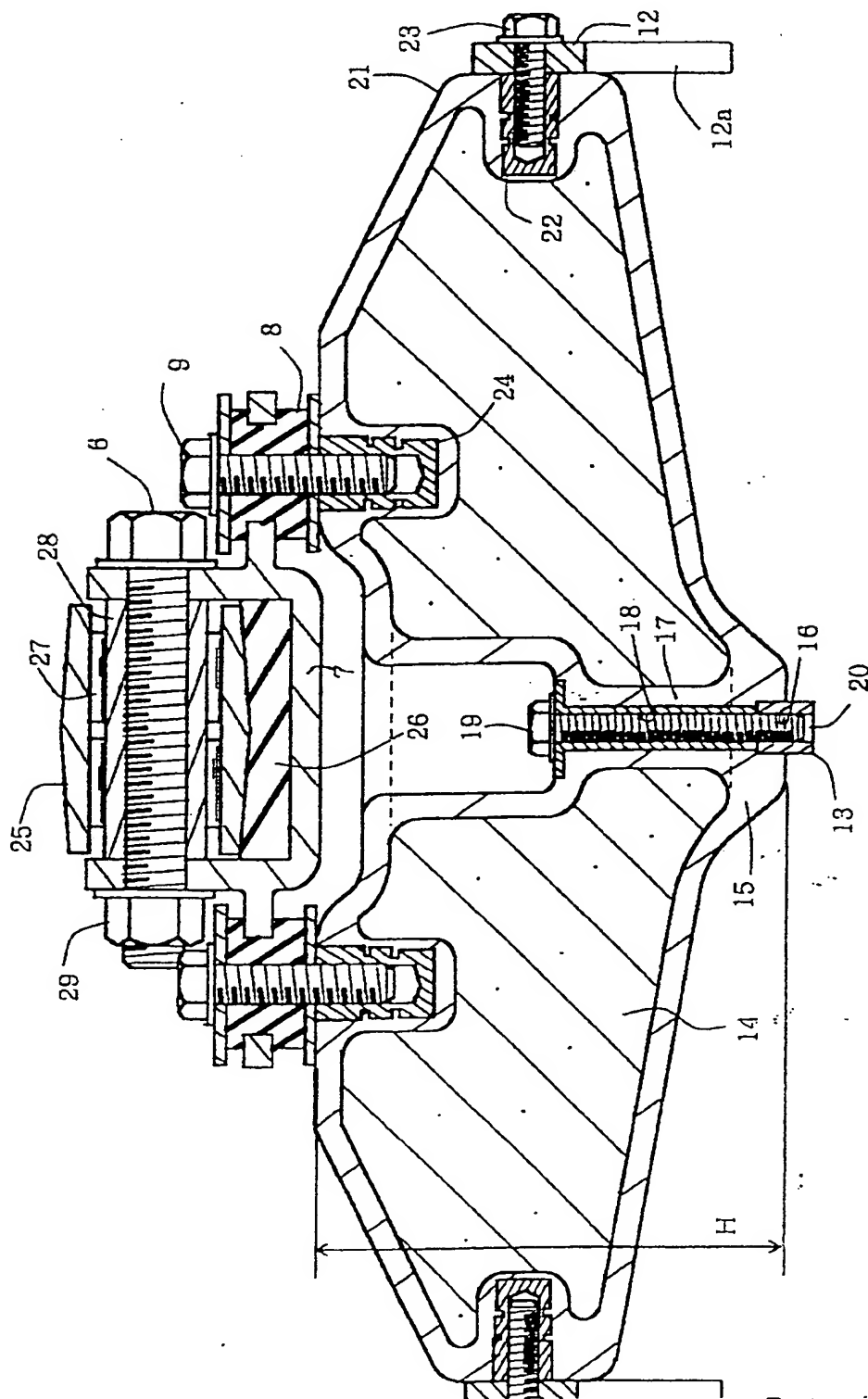
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図面

【図 1】

(Fig 1)

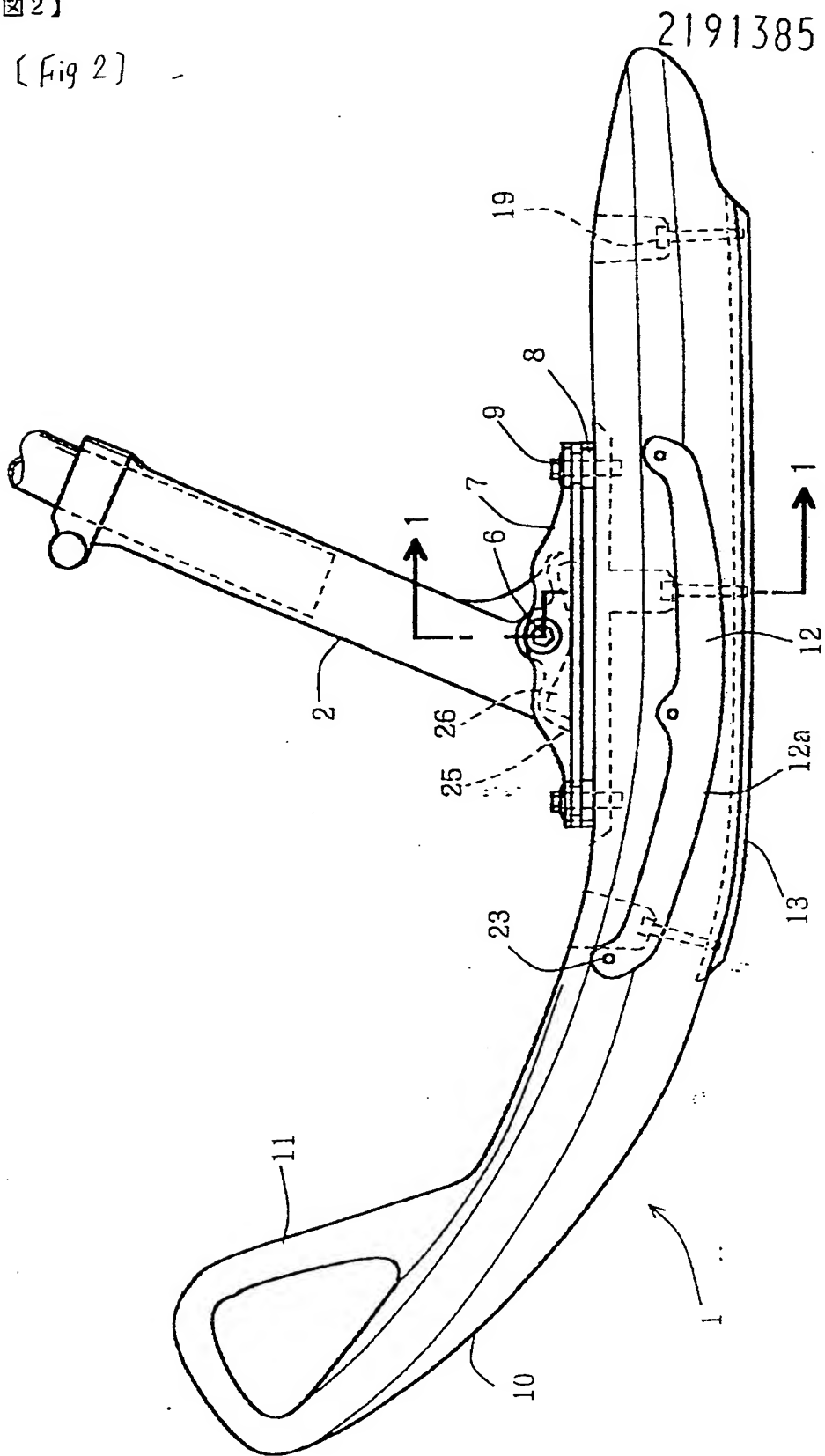
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Patented by
S. M. & S. M.

【図 2】

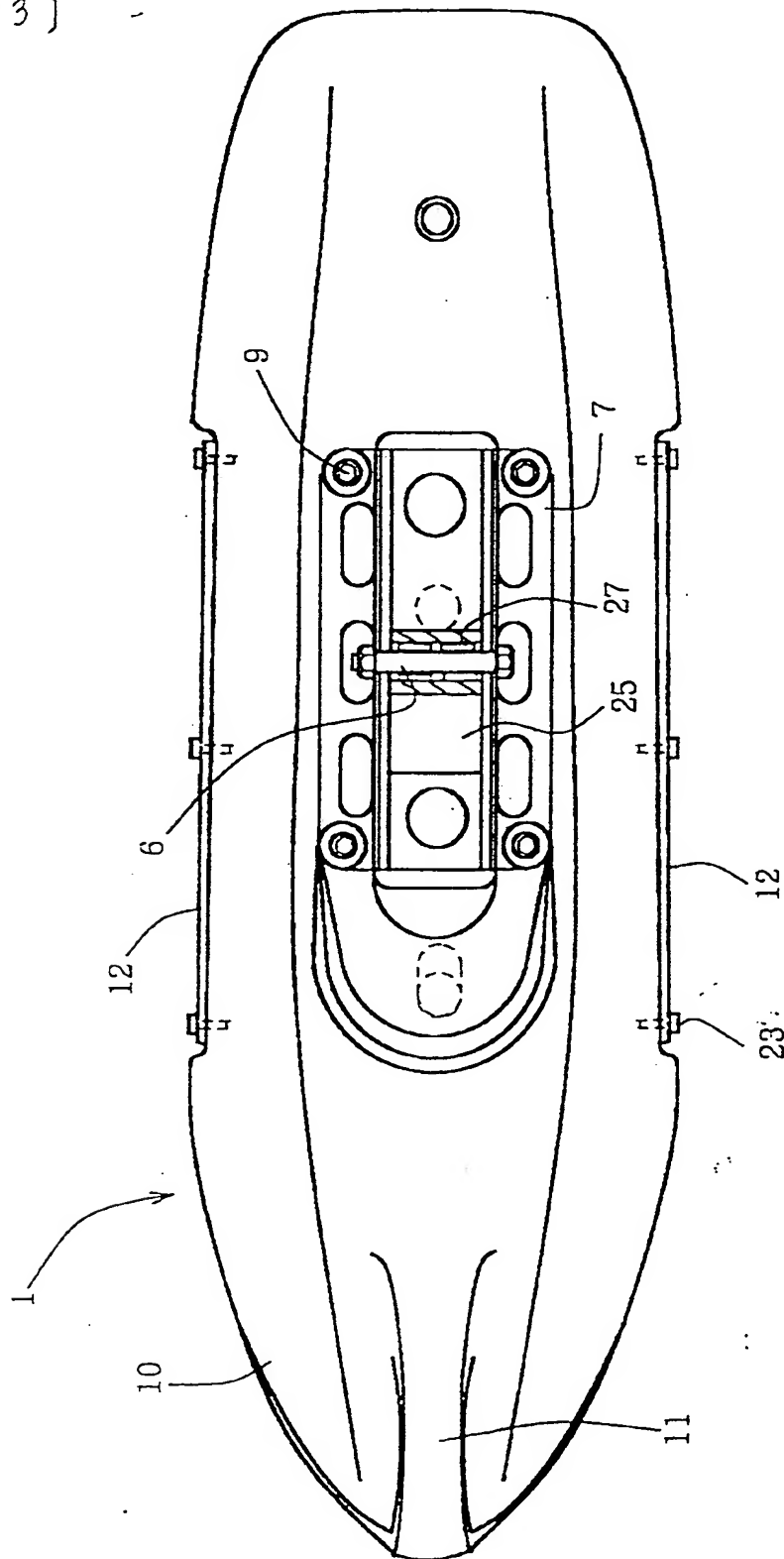
[Fig 2]



【図 3】

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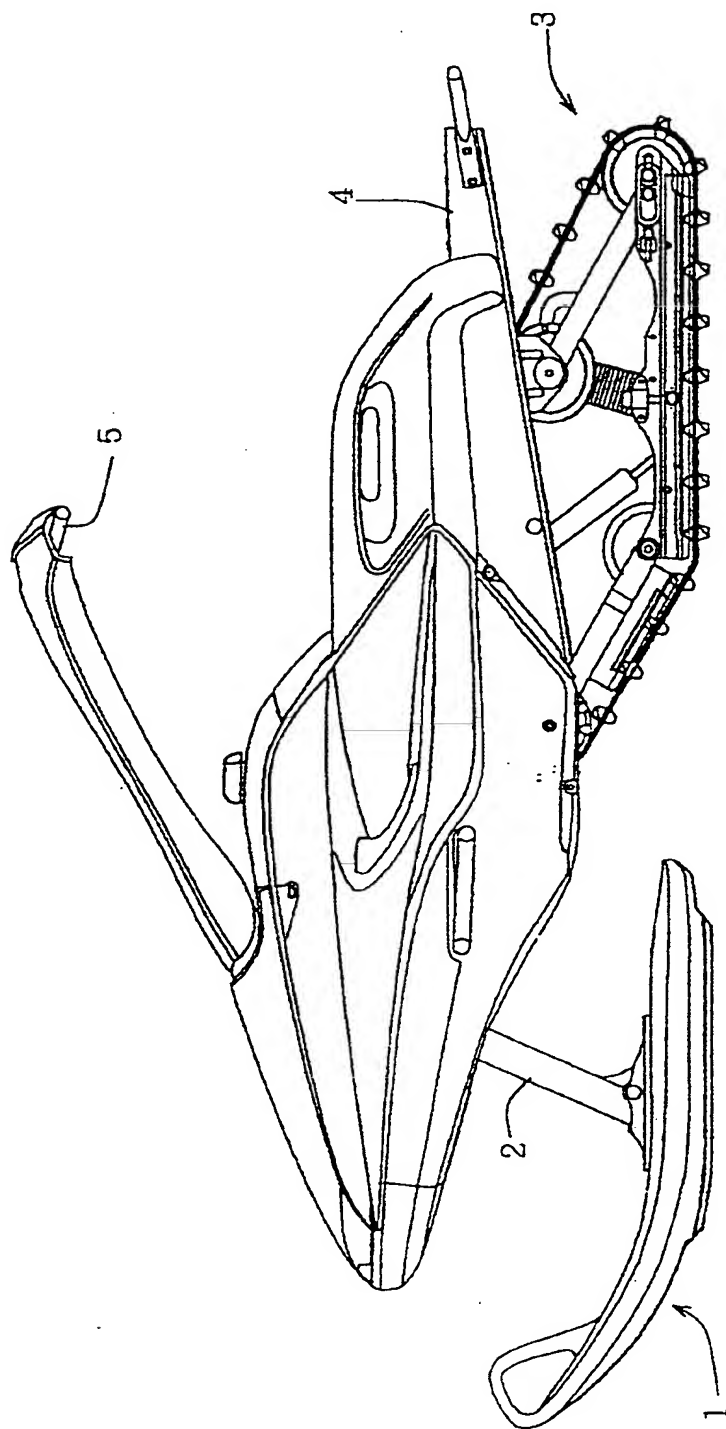
[Fig 3]



【図4】

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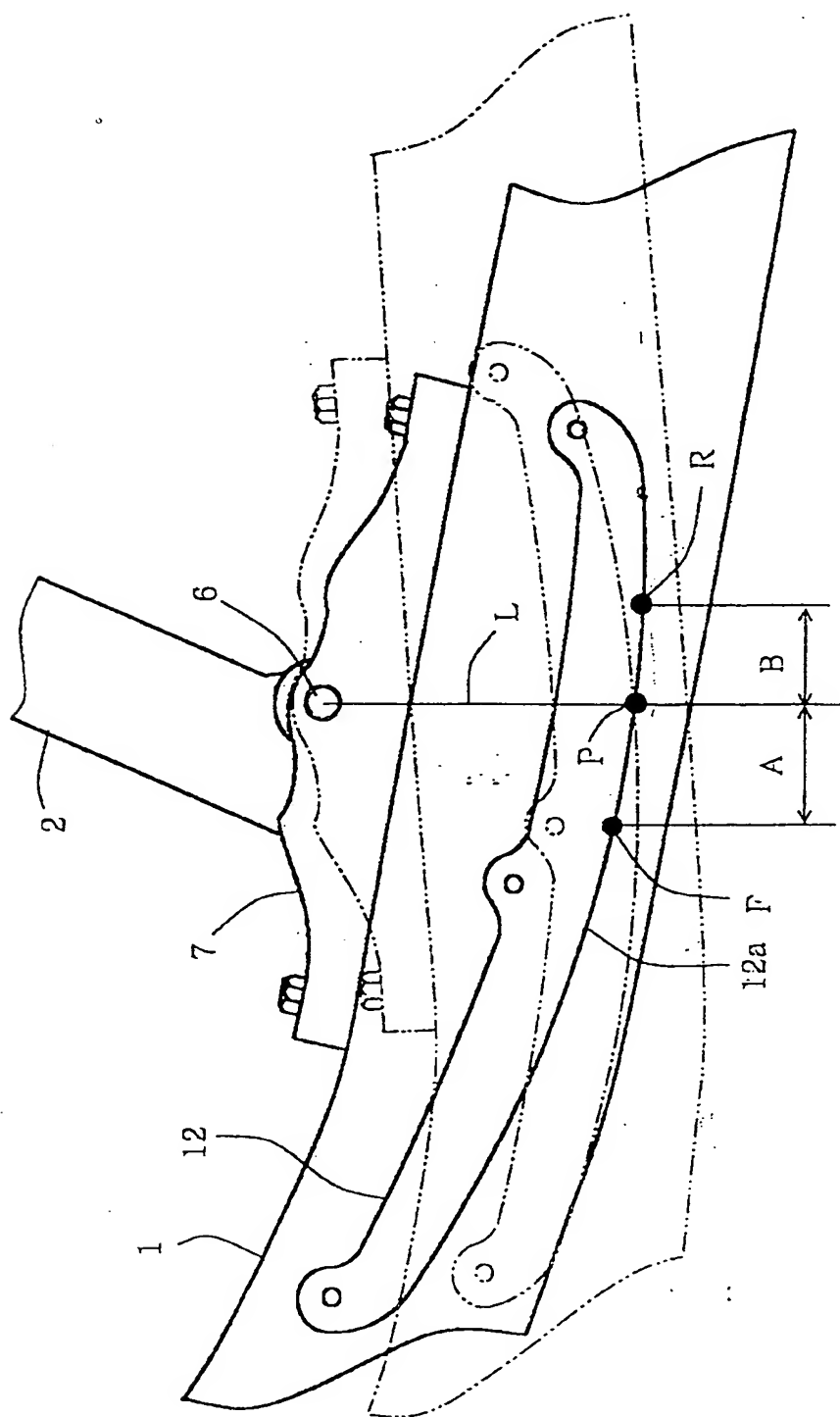
[Fig 4]



【図 5】

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(Fig 5)



【図 6】

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(Fig 6) -

